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# CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society  
Of America

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*Opuntia vulgaris*



# JOURNAL OF THE CACTUS AND SUCCULENT SOCIETY OF AMERICA

A monthly magazine devoted exclusively to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. "The Cactaceae," by N. L. Britton and J. N. Rose, has been adopted by this Journal for purposes of identification.

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## Nomenclature

There seem to be comments abroad that the JOURNAL is prejudiced in cacti nomenclature. The columns of the JOURNAL are welcome to anyone who has a constructive suggestion along this line. We desire to hear the pros and cons and then the majority will decide the policy of the JOURNAL in regards to accepting the best method for naming plants.

Some have criticized Britton and Rose for changing such generic names as *Mammillaria* to *Neomammillaria*. The reason for this change was that a genus of Algae was given that name in 1809 and is actively in use today. Such explanations will accomplish much in clearing the disagreements.

Botany never stands still and although *The Cactaceae* is the most complete work in the English language, new species and new genera are forming and naturally any recorded work will be superseded by future knowledge.

Although errors no doubt have been made which will soon be cleared up, the merits of such works as *The Cactaceae* will stand and may well serve us as the best complete published works on cacti to date.

—EDITOR.

## EUPHORBIAS

Attention of Mr. Frick: Before the days of Quarantine restriction you must know that there were a great many more *Euphorbias* in Los Angeles than there are at the present day. We had *E. obesa* here 20 years before any botanist had described it. We also had the Zwartkops plant. We had also *E. meloformis* var. *corduroyi* figured as *E. meloformis* in Nicholson's Dictionary of Gardening, Vol. I, p. 541, fig. 741 (We even had beautiful cristates of *E. meloformis*). The great *Euphorbia* man of the period was Mr. Alverson of San Bernardino, from whom I obtained a fine crest (He was the discoverer of the *Opuntia ursina* (grizzly bear). Mr. Alverson had correspondents all over Africa and had many plants never seen here now. Mr. Frick's botanical friend may be what we call a lumpner, i. e., one who does not recognize varieties unless they are different enough to be called species. Perhaps this will stir up Dr. Marloth to an answer.

A. D. H.

The demand for back numbers of the JOURNAL has been so great that the supply of the early numbers has long been exhausted. Any extra copies you may have will be greatly appreciated if mailed to G. A. Frick, Business Manager, 1800 Marengo Street, Los Angeles, California.

## "WINDOWS" AND "EYES"

By JAMES WEST, *San Rafael*

When the genus *Lithops* was being reviewed in these pages<sup>1</sup>, mention was made of the fact that in this genus certain areas at the apex of the growths are devoid of chlorophyll and more or less translucent, presumably in order to diffuse and moderate the light by conducting it through the colorless tissue to the usually underground green parts of the plant. This protective device of nature is peculiar to that vegetable world full of surprises, the flora of South Africa, where it has been developed in more than one family of plants.

In *Lithops*, nature seems to have taken the first tentative steps in this direction, for in most of the species it has not been carried as far as in some other genera of *Mesembrianthemum* as we shall presently see. The species of *Lithops* may be ranged into a series, at one end of which stand such species as *L. pseudotruncatella*, in which the "windows" are merely pin-points or reticulated lines on a opaque surface. Farther on come species of the type of *L. bella*, for instance, where the translucent

parallel with the amount of fenestration in this genus; thus, greater window area also coincides with greater concavity of the apex, a deeper, more gaping fissure and stronger tendency to caespitose habit. All these are found so in our species, which is also geographically at the end



X2 Photo by James West.  
*Lithops optica* N. E. Br.

areas take up a greater proportionate amount of the apical surface and tend more or less to fuse with each other. The series culminates in the plant here illustrated, *L. optica* N. E. Br. (opticus=eye-like), where the lines have widened and fused to such an extent as to turn almost the entire top into a solid "eye." It may be remarked that other characters seem to run



X2 Photo by James West.  
*Fenestraria rhopalophylla* (Schl. & Diels) N. E. Br.

of a series, being farthest west and nearest the coast of the group of species from the southern part of Great Namaqualand (S. W. Africa). In this "optical Stoneface" the tops of the leaf-pairs are strongly convex, almost conical, with a deeply cleft fissure between. The entire tip is more or less translucent, as may be seen by looking at it horizontally against the light. When looking down on it, the turbid window stands out darkly green against the grayish or brownish of the remainder of the plant. The illustration shows an immature plant, in which the characters are not as yet as pronounced as they would be in an older one. The flowers of *L. optica* are of the usual type in the genus, in this case rather small for the size of the plant,

<sup>1</sup>"Stonefaces" August, 1929, p. 4.

with few, widely spaced petals. The color is white, sometimes tending to rose, a rather unusual feature in this white, or yellow-flowered genus.

One other species of *Lithops* is windowed as *L. optica*, *L. rubra* N. E. Br. This was given as *L. optica* var. *rubra* Tisch in our formerly published list of *Lithops* species, but Mr. Brown has since assured us that it is undoubtedly specifically distinct; the list will have to be therefore amended accordingly. In habit it is very similar to *L. optica*; what distinguishes it is the spectacular red color which suffuses all parts of the growths. The writer has not seen the plant in the flesh, nor is it yet in cultivation here, so far as known, but from all accounts it is an acquisition greatly to be desired. The German Cactus Journal reproduced a photograph in natural colors of the plant in February, 1929, which would make any *Lithops*-fancier want to have it. The color is said to be quite permanent, regardless of exposure or cultivation.

With our next species of Window-Mesembrianthemum we come to a plant which has suffered the fate of many another of its kind in forming a shuttlecock between the warring factions of Mesembrianthemumology, tossed from one new genus into another without apparently being able to find a resting-place in any of them for long enough to settle down. *M. friedrichiae* (after Miss Margaret Friedrich of Warmbad, S. W. A., the discoverer, who is also godmother to *Lapidaria* (*Dinteranthus* *Margaretae*), was first described by Prof. Dinter in 1914. When the revision of the genus began, Mr. Brown included it in *Lithops*, whence it was transferred for a time to *Conophytum*; when Dr. Schwantes made a separate genus of the section *Biloba*, it was assigned to this as *Derenbergia friedrichiae*, only to be thence removed into a genus of its own as *Ophthalmophyllum friedrichiae* Dtr. & Sch., where we may leave it for the present, although Dr. Tischer has lately re-instated it in *Conophytum*, where, with the (also more or less windowed) species *C. pellucidum* Schw., (synonyms *Ophthalmophyllum marlothii* Schw., *C. elegans* N. E. Br.), *C. Roodiae* N. E. Br. and *C. turrigerum* N. E. Br., it forms the new section *Ophthalmophylla*. The name is from the Greek, *ophthalmos*=eye, and *phyllos*=leaf.

As might be guessed from its lengthy synonymy, *O. friedrichiae* presents some anomalous features. While the body is *Lithops*-like, with a fissure reaching across the top and part way down the sides, its flower shows some of the features. While the body is *Lithops*-like, with a tube at the base, with stamens inserted upon

the tube. The leaves are covered with a velvety tomentum; the window-areas take up most of the flattened-concave top, they are turbidly reddish and form in the wild state the only part of the plant showing above ground. The underground parts are green, becoming reddish when exposed. The flowers are rosy-white. The plant is usually single, seldom forming offsets. Unfortunately we are not able to present an illustration of *O. friedrichiae*, as the only plants we ever had did not survive the seedling stage, and no others seem to be in cultivation as yet; a good colored plate of it may be found in Mrs. Bolus' *Mesembrianthemum*, p. 36. Dr. Tischer reports the plant as not difficult in cultivation, having survived a rainy German summer unprotected, so we may hope that it will prove to be hardy with us.

The species enumerated thus far have "windows" and "eyes" indeed, but, being more or less clouded, colored or variously marked, they are not particularly striking to the casual observer. In the next-following kind, however, we find windows so clear and glassy that no one could escape noticing them.

*Fenestraria rhopalophylla* (Schl. & Diels) N. E. Br. is indeed one of the most notable curiosities in all the Mesembrianthemum world. The name is derived from Latin *fenestra*=window, and Greek *rhopalos*=club, the club-leaved Window-plant. If a still "commoner" name is wanted, there is one already quite current among the fraternity, originally coined by our friend Mrs. Harney of San Mateo, "Baby-toes," which should prove a valuable addition to the lexicographical collection of Col. Kewen.

*Fenestraria* is a stemless, tufted plant with opposite leaves, several pairs to a rosette. The leaves are upright, straight or slightly curved, terete, thickening gradually and evenly from a slender base to a rounded tip, which bears the convex window, more or less obscurely triangular in plan, doubtless the sole remaining vestige of a former state of triangularity in the whole leaf. Varying with the age and state of growth of the leaf, the window may be either very clear and glossy, transparent as a bubble of greenish water, which is the case especially in young growing leaves, or else, in a later or more dormant stage, dim and tired as the eyes of the aged. In the opaque parts the color is a vivid green, the surface being quite smooth and unbroken, except for a certain amount of indistinct dotting. The window is quite colorless, but appears slightly greenish by reflection. If a leaf is dissected longitudinally, it will be seen that the colorless cell-tissue extends quite

through the interior of the leaf down to the base, forming an inverted cone, which is surrounded concentrically by a narrow outer mantle of chlorophyll-bearing tissue. *Fenestraria* grows in the sand-deserts of the Namib, S. W. Africa, near Pomona. Its arenophil habits are made evident in the long fleshy tap-root which it sends



*Fenestraria rhopalophylla*  
young seedling X2

deep into the sand to follow the moisture downward. In this, as indeed in flower-structure also, it resembles greatly some of the species of *Conicosia*, one of which, *C. elongata* (Haw.) N. E. Br., is a well-known garden-escape in the San Francisco sand-dunes. The flowers of *F. rhopalophylla* are large and showy, white petals surrounding a cluster of yellow stamens; they are borne singly on stems equalling or exceeding the leaves in length.

In its native habitat the plant is buried literally "up to the eyes" in sand, nothing but the glassy lenses of the leaf-tips peeping above the surface, reminding one, Dr. Marloth says, of the sand-viper of that region, which hides itself in the same manner. How weird an effect this must produce, may be gathered from the colored picture, of the plant in Marloth's *Flora of South Africa*, vol. I, pl. 52, which shows the plant in its natural manner of growth and rooting-habit. The queer effect is enhanced by the flowers, somewhat resembling single white daisies, emerging some distance away from the cluster of "eyes," as if growing all by themselves out of the bare sand.

In cultivation *Fenestraria* has proved to be quite an amiable subject; it is true that it may once in a while become temperamental and suddenly die off for no discoverable reason, like a few other species, but on the whole it is not difficult. On the theory that plants should be given their natural conditions as nearly as possi-

ple, it is sometimes advocated to bury it in sand. In this writer's limited experience this has usually ended in the loss of the plant, at least under pot-culture; the best plant he ever had was one that had never been moved out of the seed-pan, where it grew in a soil consisting largely of leafmold, and did its best to poke its stout tap-root through the drainagehole. It is easily raised from seed; the young seedlings are interesting to watch, as the very first pair of true leaves shows little windows even when just budding. The cotyledons are of the semielliptical flat type common in the family, not highly succulent as in *Lithops*; it must be remembered that this genus, in spite of its peculiar appearance, is more closely related to some of the *Mesembryanthemums* of the usual herbaceous or sub-shrubby type than to *Lithops*, *Ophthalmophyllum*, etc. It can be propagated from offsets also, which form quite freely at the base of the old plant in the shape of rooted rosettes easily detached, so much so, that when transplanting a large clump, it is quite difficult to keep it from falling apart.

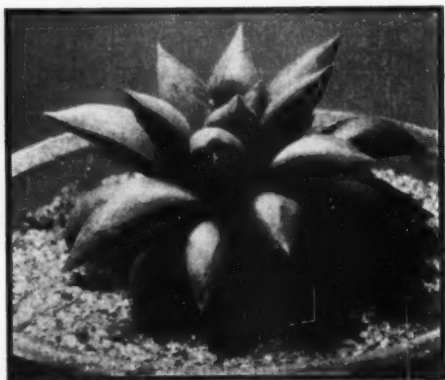
The genus contains a second species, *Fenestraria aurantiaca*, N. E. Br., very similar to the last, except for the yellow flowers; this is found in the region of Port Nolloth, S. W. A. It is not yet in cultivation with us.

One more window-Mesembrianthemum remains to be mentioned. This is *Fritbia pulchra* N. E. Br. (after F. Frith, a South African patron of botany; Lat. pulcher=pretty). This also is not yet in cultivation here, but is becoming very popular in Europe. Though not closely related, it has leaves somewhat on the same order as *Fenestraria*, but here they are sharply truncate and nearly flat at the tip, so that the windows have much less depth; in section they are irregularly circular, with windows rough or hummocky instead of smooth. According to Mr. E. J. Labarre, a Dutch amateur who first succeeded in flowering it (*Succulenta*, Dec. 1928) a lady in South Africa calls it "Fairy Elephants' Feet" (Attention Col. Kewen!), which gives a very fair idea of the leaves. The flowers are quite different from those of *Fenestraria*, being sessile, with funnellform corolla, rather wide, cuneate petals, and nearly as large as the little plant itself. Judging from Mr. Labarre's enthusiastic description, they make a magnificent show of color, being at the center at first yellow, then fading to white, while the outer part is carmine rose. Evidently we have here another mark to shoot at for our mesem-fanciers. The species is of recent discovery, and hails from the western Transvaal, near Rustenburg.

In conclusion, and as a parallel to these *Mesembrianthemums*, we are presenting in our



last illustration a window-Haworthia. In this genus of Aloineae there is, along with an almost monotonous similarity in the flower, a curiously divergent development in apparent leaf-texture. On the one hand we have an extremely dense and rugged, leathery, almost reptilian armor, dark in color, and set with warts and tubercles; on the other a tenuous, pellucid, membrane-like skin of the utmost delicacy and pallor. The former type is displayed in such species as *H. margaritifera* (L.) Haw., of the latter *H. turgida* Haw., here illustrated, presents an example.



Natural size. Photo by James West.  
*Haworthia turgida* Haw.

*H. turgida* is nearly related to the better-known *H. cymbiformis* (Schr.) Haw., but has smaller, narrower, more numerous leaves, which are reflexed and not truncate as in the other species. The colorless window-area takes in the greater amount of the upper leaf-surface towards the tip, and extends also, though more sparsely, to the under side for some distance from the tip. The nerves alone show as green lines in the window-areas.

In the case of the window-Haworthias there is some question, whether the windows are indeed a measure of protection against over-insolation and not rather a device to increase the light-gathering capacity of the plant. This opinion is put forward by Berger<sup>2</sup>; and indeed, to judge from the behavior of these plants, at least in cultivation, one would certainly be inclined to consider them as thoroughgoing shade-plants, so unmistakably do they show their aversion to exposure to full sun. No sooner are they transferred to a protected position, than they begin to flourish. There seems to be little information at hand as to their environment in

their native habitat; perhaps some South-African reader may be able to answer the question. Most *Haworthias* have the habit of closing their rosettes in drought, and expanding them in moist conditions; the window-areas are generally so located, that in the closed condition they alone are exposed, while the green parts are kept protected through the close appression of the leaves. In the rough-leaved species the arrangement is somewhat similar. Here, the white spots or "pearls" of *H. margaritifera*, for instance, are located on the upper side of the tubercles, so that, in the closed position of the rosette they alone get the full impact of the light; also, the upper surface of the leaf is usually undotted, or much less dotted, than the under; this is exposed only when the rosette is expanded. The arrangement can be seen very well by looking down on a leaf nearly vertically from tip to base, when it will appear almost white, as only the surfaces of the dots meet the eye; while when looking up the leaf from base to tip in the same way, it will seem quite green, only the green bases of the "pearls" showing. So it will be seen that, though looking superficially rather unlike, the rough, white-tubercled surface of these species really serves the same purpose as the smooth, translucent one of the others. In effect the white dots are also minute "windows."

List of species of *Mesembrianthemum* with pronounced window-leaves.

*Fenestraria rhopalophylla* (Schl. & Diels)  
N. E. Br.

*F. aurantiaca* N. E. Br.

*Fritbia pulchra* N. E. Br.

*Lithops optica* N. E. Br.

*Lithops rubra* N. E. Br.

(*L. optica* v. *rubra* Tisch.)

*Ophthalmophyllum friedrichiae* (Dtr.)  
Dtr. & Schw.

NOTE: In the article "*Titanopsis* and some Others" in the January issue two additional species should be added to complete the list there given:

*Titanopsis Luederitzii* Tisch. From Luederitz Bay, S. W. Af.

*T. Hugo-Schlechteri* (Tisch.) Dtr. & Schw.  
From Warmbad, S. W. A.

An article by Ysabel Wright of Santa Barbara, illustrated by Margaret Kincher, will appear in the next issue. This "Illustrated Glossary" will be appreciated by many of the readers who will demand a continuation of the series.

<sup>2</sup>A. Berger in Engler's *Pflanzenreich*, Liliaceae, p. 13.

## GROWING CACTI

By PERRIE KEWEN

After a painstaking review of many of the most distinguished authors, who have devoted the better part of their lives to the study and successful cultivation of the cacti, I herewith present to the readers of the "Cactus and Succulent Journal," the salient features of my deductions. For the best preservation and care required for the cultivation of cacti in their new environments, I fully appreciate, after my laborious efforts and experience the necessity of something explicit for the guidance of the amateur.

Cacti are native from southern Canada to far down in South America. Between these extreme points there is scarcely any combination of atmospheric and soil conditions that does not support one or more species of the family. They are found near the seashore in the Tropics, also in California, as well as high up on the mountains where in winter they are subjected to very cold weather. With these facts in mind, it is clear that when collected they can not all be treated alike, but must be grouped according to the conditions under which the individuals grow in their native haunts, and each group must receive a different treatment to accord therewith.

The cacti families are indeed accommodating, as they will live in almost any soil (provided it is free from raw animal substance). In their native home they grow mostly in sandy or loamy soil, in hot and arid regions, so it becomes incumbent upon those who grow them in the open to apply soil that has been proven to be best adapted for the different varieties and in a thoroughly drainable location, as otherwise you lose the beauty of their new growth and flora, which is the desired accomplishment of all collectors.

### Rooting Cactus Plants and Cuttings

Use pure white sand, neither too coarse nor too fine, as it is the best for all propagation and rooting.

It should be made damp, not wet, before planting your cuttings, and kept dry most of the time, not watering more than once a week until cuttings are rooted. The exceptions are that most of the *Echinocereus* will stand but little water until well rooted.

It is easier in many cases to root cuttings, than to start new roots on plants.

It is most advisable to cut off all of the old roots; however there are some varieties, such as *Echinocactus horizionthalonius*, *E. uncinatus*,

*E. crispatus*, and a few others that will strike lateral roots from the old ones, even after being out of the ground for three or four months. It is best to cut off all roots from these as well and thereby be assured of a clean and healthy plant.

Of all cacti, *Pilocereus* cuttings are the hardest to root. Allow them to lie for two or three days with their butts to the sun in order to heal them, then dip into powdered charcoal, and plant in perfectly dry sand; do not water until roots have started. When watering, a very weak solution of lime water will benefit them but does not benefit the majority of the other genera.

### Watering

In summer it is best to water the cacti in the late afternoon; in spring and fall, morning is the most suitable; while in winter, midday is advisable. Never water plants when the sun is shining upon them, for the reason that before the moisture is evaporated from the plants, they are apt to be scorched which afterwards develops into rot. During the hot summer months when the cacti are in new growth, water frequently; while in cloudy weather when the atmosphere is moist, water must be withheld to a certain extent, excepting in the case of strong growing plants.

Never water over the plant, especially where it is liable to settle in the crown of the plant.

In watering your plants during the winter in the hothouse, allow the water to stand and become tepid, about the temperature of the plant, so as not to chill it.

### Spraying

Cacti should occasionally be sprayed for cleansing purposes only, as it is dangerous to the plants to make a practice of frequently spraying with water, as it is something no cactus ever gets in its native habitat.

### Potting Plants

Pots must be clean and dry. Broken oyster shells are very good for drainage and are beneficial to the roots. Broken parts of bricks are also good for drainage purposes.

In potting ordinary plants, use a large piece of a broken pot to cover the hole, and several smaller pieces around it, also some gravel and charcoal. The soil must be neither too moist nor too dry.

Most plants after repotting should be kept in a warm place and be shaded from the sun for a few days. In repotting old plants it is best to

disturb the roots as little as possible. Remove the plant to be repotted by inverting the pot and gently tapping its rim on the edge of a bench or some solid structure. The whole body of dirt will come out in a lump. Remove any bits of broken pots that may be attached to the bottom, but leave the soil in place about the roots. The surface soil should be removed if it shows any evidence of containing algae or fungus growth. Place this ball of dirt and roots in a pot and pack fresh soil about it, leaving sufficient space at the top to receive water. After the plant is potted, the surface of the soil should be covered with fine gravel to a depth of at least half an inch.

The soil about the plants should never be allowed to become absolutely dry for any great length of time or the roots will be seriously injured; on the other hand, it must not be kept saturated but should be kept slightly moist at all times. Any superfluous water standing about the base of the plant or in the soil about its roots is a serious menace, since it acts as a medium through which germs or rot enter the plant and soon destroy it.

Cactus plants contain so much liquid that decay works very rapidly through them. When decay once starts it is difficult to save the plant, hence the urgent necessity for having thorough drainage below the plant and a thoroughly drainable soil.

When a cactus plant has few or no roots, it is best to fill your pot three-fourths full with the ordinary mixture and place on top of this, directly under the plant, some clean sand and a little charcoal. It will make roots in this which will strike through into the soil. Never let the soil get into a stagnant wet condition, as it is sure death to a cactus; and too dry is nearly as bad. The exceptions are *Echinocereus*, *Echinocactus* and *Neomammillaria* and *Coryphantha*; these will stand almost any amount of dryness.

Pruning may be done at any time, but preferably when the atmosphere is dry, so that the cut surface may dry and heal quickly.

#### Diseases

The one disease from which cacti suffer more than any other is rot. The plant body is so saturated with water that it forms an excellent medium for the growth of rot-inducing organisms. This malady is likely to attack the plant at any point. Any cut or bruised place presents the most favorable point for infection, from which rot spreads rapidly and destroys the plant. Water dripping on a plant for even a short time may induce infection. By far the greater number of plants receive the infection through their base or roots, whence it works upwards through the

center. By the time it has reached the surface the plants are usually too far gone to be saved. If the diseased condition is detected before it has reached the crowns of the plants they may be saved by cutting away all the diseased portions and then grafting the crowns on some healthy stock. The soil in which they were potted and also the pots, if they are to be used again, should be sterilized, so that other plants may not be infected from them.

Another disease, more common to species of *Neomammillarioids* and to a less extent found on *Echinocactus* and *Cereus*, makes its first appearance as a small, light orange colored spot on any portion of the plant surface, usually starting at a pulvinus, which seems to be the point at which the infecting germ enters. This spot steadily grows until the plant is totally destroyed. The disease travels inward, toward the center of the plant, following the fibrovascular bundles. The colored tissue readily separates from the healthier portions of the plant and is easily removed, but this merely checks its ravages for a time. The disease penetrates every portion of the plant and in time will make itself manifest again in other orange colored spots on the surface. It is a contagious disease, and the only hope for saving a collection of plants is to destroy all the infected individuals, preferably by burning them. No remedy for this disease has ever been applied with success.

When a plant stands still, looking sickly with no sign of growth it is nearly always because the soil is exhausted, or the root may be infested by the Nematode (Pinworm). A solution of Semesan will destroy them.

#### Potted Plants

Those who keep their plants in pots all the time should place them in the ground during the hot weather. Dig a hole the size of the pot or slightly larger, four or six inches deeper than the pot. Fill the additional space thus created with stones or broken brick so that in placing the pot its top will be even with the surface of the ground, then pack the earth tightly around the pot.

This should be done in spring as soon as the warm weather is assured and left until the cool weather in fall.

Pots when exposed to the blazing rays of the sun will burn the roots, no matter in what character of soil they have been placed, and consequently fail to make new growth.

Glazed pots are not as good as ordinary earthen ones. This holds good for all kinds of plants, but the pot holding the plant may be placed into an ornamental pot a size larger without injury.



It is advisable to give the plant fresh earth at least once a year.

#### Propagation from Seeds

The best soil for growing cacti from seeds has proven to be a thoroughly decomposed sod mixed with at least its own volume of sand. After these ingredients have been carefully mixed they are run through a sieve of about  $\frac{1}{4}$ -inch mesh, which removes any large particles and all superfluous root fibers, making a loose soil which drains readily. It is not necessary that the soil be rich in humus, and manured soils should always be avoided because of their undue tendency to hold moisture; they also harbor germs of decay. Porous pots are soon covered with green algae when left in a moist place for any considerable time. This growth will spread over the surface of the soil in a close blanket which precludes the free access of air and seriously retards the drainage of superfluous water. These algae will in time grow over the little seedlings that have survived other adverse conditions and will smother them. To combat the algae the pots should be thoroughly sterilized just previous to being used, and to accomplish this the best method is to bake the pots so that all life on them or in their pores may be destroyed.

Reasonable care should be exercised in preparing the pots for planting. As a rule, the drain hole in the bottom of the pot is too small and is easily clogged. The hole should be enlarged, as it requires a thorough drainage. The pot should be filled to one-fourth its depth with small bits of broken pots, and on these the prepared soil should be placed and pressed or shaken together firmly but not packed hard. The surface should be half an inch from the top of the pot.

Over it the seeds are evenly distributed and then covered with a very thin layer of soil, upon which is spread a layer of fine gravel to a depth of about one-fourth of an inch. This layer of gravel is important in many ways. As the pots are later watered with a fine spray, it prevents the surface of the soil from washing and consequently keeps the seeds from being disarranged. It also promotes the free passage of moist air through the spaces between the bits of gravel, which together with the shading by the gravel, prevents the surface of the soil from becoming dry or baked. It also checks the growth of algae over the soil surface.

As the seeds grow they easily force their way through the gravel to the sunlight. For the first few months of their existence cactus seedlings are but small, globular, balloon-shaped or cylindrical bodies, composed of very thin-walled cells filled with turgidity with water. They are so ten-

der and delicate that they readily "damp off" if subjected to a sudden change from a high to a low temperature. The death rate of seedlings from this cause has been greatly minimized or almost wholly checked by the use of the gravel over the surface of the soil. This layer, with its intervening spaces, acts as a protection from sudden changes in temperature during that period of their growth when the seedlings are most susceptible to injury. The little seedlings have exceedingly fine and delicate roots which spread out near the surface of the soil. If this surface is allowed to dry out to the depth of one-eighth of an inch or more, these delicate rootlets will be destroyed and the seedlings will be damaged or killed.

Watering should be done at least once a day. The temperature of the propagating house or frame should be kept about 70°F. and as nearly uniform as possible.

The proper time for transplanting the seedlings differs for different genera and species, but they should usually be left in the germinating pot until the plant shows at least three or four clusters of spines.

#### Remedies for Insects on Plants

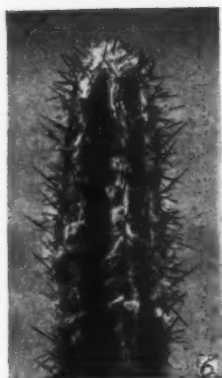
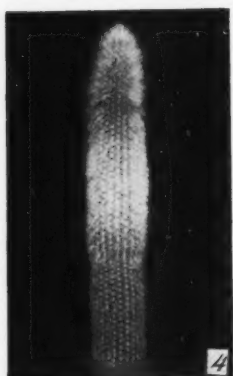
**BUGS**—When the MEALY BUG gets a firm hold on a plant, there is no better remedy than spraying with alcohol, (wood alcohol). Use an ordinary atomizer.

**RED SPIDERS** will give way to tepid water.

**SCALE**—Brush the parts affected with castor oil. If the oil is cold and thick, warm it slightly before applying. It is also safe to pour over the soil a tablespoonful of castor oil in case the scales have become attached to the roots. It is evidently obnoxious to all animal life, including red spiders.

**NEMATODE**—(Pin Worms)—are an insidious enemy which infects the roots and kills every live portion of the plant, and worst of all, infest the soil, for which there seems no remedy, except sterilization. They even attack the roots of *Euphorbias* and the best known treatments are the use of castor oil or a solution of Semesan; this to be used repeatedly for several days by soaking the base of the plant.

Howard E. Gates, of Anaheim, left the latter part of January for San Jose del Cabo on a scientific and collecting expedition. He plans to go by truck to the extreme end of the Lower California peninsula and expects to return about Easter. He is armed with typewriter and cameras and the JOURNAL is promised both scientific articles and stories of his experiences. May good luck be his on this trip.

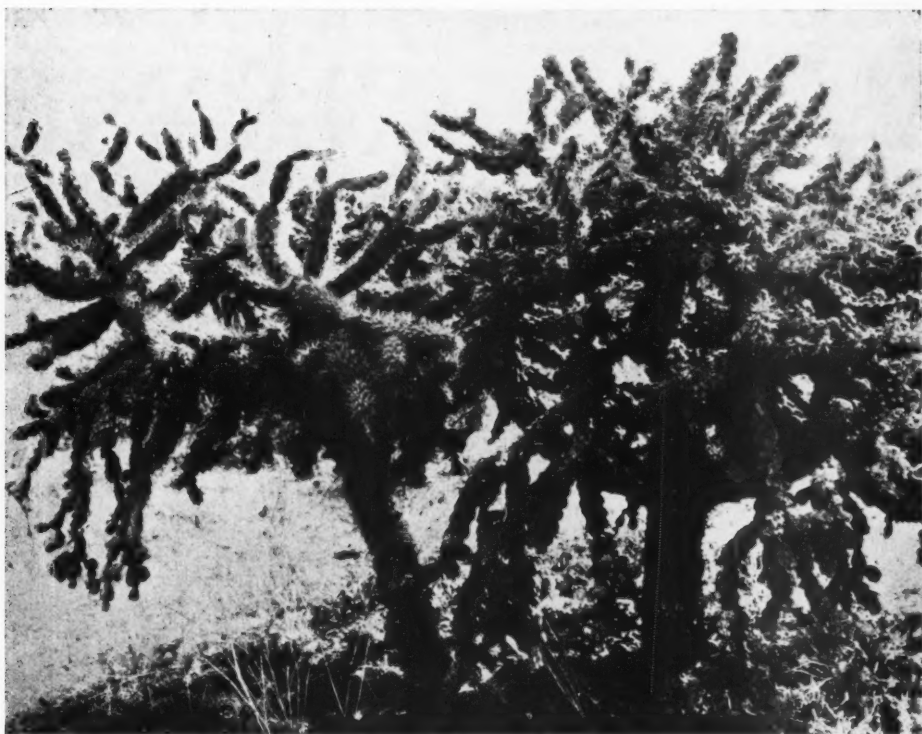


**Plants from Collection of Count F. M. Knuth  
Knuthenborg, Bandholm, Denmark**

Our genial editor hands me 6 small pictures of Cacti with the offhand remark that he would like them named. So simple! However in my capacity as horticulturalist I am privileged to guess—a privilege denied me as a obtanist. It is almost impossible to be certain of a Cactus from a photograph. However, these names are my guesses as to the names of the pictures of Count Knuth, of Knutenborg, Denmark. Am I right?

DR. A. D. HOUGHTON.

1. *Astrophytum myriostigma* Lem. The Bishop's Hat, from Mexico (Coahuila).
2. *Leucobryconia principis* Hook. The Agave Cactus, Hidalgo, Mexico.
4. *Cephalocereus straussii* Nov. Comb. (perhaps a *Borzicactus*).
5. *Coryphantha pallida* B. & R. From Tehuacan, Mexico.
6. *Cephalocereus palmeri* Rose. Eastern Mexico.
7. *Neomammillaria decipiens* (Scheid) B. & R., San Luis Potosi, Mexico.



*Opuntia fulgida*. It is this plant that *Melitara parabates* feeds on.

## CACTUS CATERPILLARS

By E. MORTENSEN, Pearsall, Texas

"Cactus Caterpillars! Ugh!" In my mind's eye I can see the feminine readers shudder as they read this title. And well they might, for a picture is at once brought to mind of fuzzy, wriggling caterpillars busily crawling about and devouring our vegetation in the springtime. In this instance, however, the caterpillars are not fuzzy and usually keep themselves hidden from the human eye; by "cactus caterpillars" I am referring to the larval stages of various species of moths that prey upon the Cactaceae of our Southwest. Anyone who has attempted to raise cactus out-of-doors will testify that certain of the species can be very destructive and will often wonder just how these little worms could have gotten there and have done so much damage before they were detected.

Cactus caterpillars is a broad classification and includes quite a number of different species among which are some of our most destructive cactus feeders. Probably the most widespread

of these in the United States are the members of the genus *Melitara*. One of these occurs from Long Island, New York, and New Jersey southward to Miami, Florida; then westward through Georgia, Alabama, and Mississippi, as far west as Dallas, Texas, on the north and Corpus Christi, Texas, on the south; it has also been found in one isolated locality in Uvalde county, at Utopia, Texas. It is called *Melitara prodenialis* and a few descriptive notes will be given to serve as a comparison with other species. The number of generations a year depends largely upon the latitude in which it is found. At Miami, Florida, moths emerge three times during the year, March, June and September; in northern Florida and Texas, the moths hatch only twice a year, May and September; it is possible that in New Jersey only one generation occurs a year. The moths lay their eggs on the spines of the cactus plants in "columns" or "sticks" averaging 25 to 30 eggs each and hav-

ing the same color as the spines. These hatch in 10 to 14 days and the little worms enter the younger portions of the plant under the cover of a heavy webbing. The worms are heavy feeders and move from joint to joint in prickly pears, eating out all of the interior matter and often destroy whole plants. They feed in colonies of 25 to 30 worms. When they are mature they are about  $1\frac{1}{2}$  to 2 inches long and of a blue color. They spin cocoons in clusters intermingled with sand or rubbish under any convenient protection, such as rocks, pieces of bark, tufts of grass, etc. *M. prodenialis* attacks various species of prickly pear cacti in the region mentioned above and has also been found to occasionally destroy *Homalocephala texensis* ("devil's pincushion") on the Texas coast.

Going westward, the next species we find in this genus is *Melitara bollii*, which is found from Del Rio, Uvalde, Hondo and Pearsall, southward to Rio Grande City, in Texas, and in adjacent Mexico. It occurs in the species of prickly pears that grow in this region. This species differs from *M. prodenialis* as described above in that only one generation occurs each year, the moths emerging in October. They work in larger colonies, averaging about 50 to 60, and are easily detected from the outside by the strings of dried brownish excretions hanging from small exit-holes in the infested plant. The cocoons are usually spun within the feeding cavity or at the base of the plant.

What may prove to be a varietal form of *Melitara bollii* occurs in the Colorado valley of Texas, and has been found at Rocksprings, Junction, Brownwood and Marble Falls, Texas. It has the same habits as *M. bollii* but spins cocoons away from the plant . . . in fact, the cocoons have not been found in the field at all.

Going westward again we find *Melitara doddalii*, which begins along the Rio Grande at Sanderson, Texas, and is found as far west as Quijotoa, Arizona, southward into the states of Sonora, Arizona, southward into the states of Sonora and Chihuahua, in Mexico, and northward as far as Globe, Arizona, central New Mexico and the plains of Texas. It has been found near Wichita Falls, Graham, Breckenridge, Abilene, and Sweetwater, Texas, which may be the eastern boundary of *M. doddalii* infestation. It does not differ greatly from *M. bollii* in habits except that moths hatch in August and September and the cocoons are usually spun under convenient protection near the destroyed plant. This species causes considerable destruction to prickly pears.

Another prickly pear destroyer, *Melitara dentata*, begins where *M. doddalii* leaves off and extends northward into the states of Kansas,

Nebraska, Colorado, northern Arizona. It occurs only in the smaller *Opuntias* of the *O. tortispina* and *O. polyacantha* type and differs from the other species in that the moths hatch in July and the cocoons cannot be found in the field. The full grown larva is an intense blue color and it travels considerably when about to spin up.

The only other species of this genus is *Melitara parabates*, which occurs only in the *Cylindropuntias* (*O. imbricata*, *O. fulgida*, *O. spinosior*, etc.) of western Texas, southern Arizona, New Mexico, and adjacent Mexico. The worms are a deep blue color and feed singly in the younger joints of the plants, giving very little external evidence of their presence until nearly full grown when the infected part turns a light yellowish color.

Another genus, *Olyca*, is closely related to the *Melitara*, and also attacks the prickly pears. The caterpillars of this group are all solitary and there are two generations a year. *Olyca junctolineella* occurs in south Texas and the worm is banded with blue. It feeds within the joints and causes characteristic swellings. *O. subumbrella* occurs in west Texas and westward into Southern California. It has an exit-hole through which the excretions are passed and its presence can readily be detected by the dried strings of excretions hanging from the hole. These worms are banded with light brown instead of blue. These species do the greatest damage in the spring when they feed on the young fruits and fruit buds. *O. creabates* is a species that occurs near San Diego, California, and does some damage to the *Opuntias* in that region.

A widespread fruit insect that has four or five generations a year and is particularly destructive to fruit in the spring of the year is *Ozamia clarefacta*. The caterpillars are of a greenish blue color and feed singly, often passing from one fruit to another, telling of their presence within by a characteristic white webbing at the entrance. They are found from Texas to California and sometimes destroy a large percentage of the prickly pear fruit crop.

*Noctuella elautalis* is the name of another insect occurring from Texas to California in the fruit buds and flowers of various *Opuntias*. The caterpillars are smaller than most of the others and are banded with red and white. It does some damage by destroying the flowers and fruit buds early in the year.

A group that causes a good deal of destruction to cacti other than prickly pears belongs to the genus *Cactobrosis*. One species, *Cactobrosis fernaldialis*, works in *Carnegiea gigantea* (giant cactus) and barrel cactus (*Ferocactus wisli-*

zeni) and is found largely in southern Arizona. The larvae are dark blue in color and become an inch and a half long when mature. The moths are a uniform gray color. Their presence within the plant is indicated by a webbing between the ribs of the plants.

*Cactobrosis strigalis* is a species attacking various species of *Echinocereus* from western Texas to southern California. Very little external evidence of its presence is shown, but when the stems are cut the tunnels are readily seen within. The larvae are a purplish blue color.

*Cactobrosis leuconips* is a species attacking *Echinocereus polyacanthus* in Arizona. The caterpillars are white with black markings and cause considerable destruction at times—eating out the interior of the stems.

*Cactobrosis interstitialis* differs from its relatives in that it attacks only *Cylindropuntias*. The worm is a dark grey color and feeds singly in the younger growth from western Texas to southern California.

*Yosemetia* is the name of a group of small

caterpillars that delight in getting into many of our decorative cacti and hollowing them out before we know they are present. They attack in southwest Texas all species of *Coryphantha*, *Homocephala texensis*, *Echinocactus*, *Hamatocactus*, etc. They show just a little webbing and excretions between the ribs or tubercles but this is not usually noticeable until the plants are too far gone to save. A good policy would be to destroy the infested plants by burning as soon as they are detected. Other methods of control cannot be suggested as little is known of their life history.

*Mimorista flavidissimalis* is a cream colored caterpillar that feeds externally on the young shoots of prickly pears in south Texas. It protects itself by a light webbing as it feeds about on the surface of the young joints and is present only in moister climates.

The above species are those more commonly found in the southwestern United States and it is hoped that the brief notes given will be of a little help to those cactus enthusiasts who are growing gardens in the out-of-doors.

## THE GENUS OPUNTIA

By ARTHUR D. HOUGHTON

The third series of the subgenus *Cylindropuntia* is called *Thurberianae*. It differs from the first and second series in having stouter terminal joints, and always having more than one spine to the areole. But the terminal joints are never over an inch in thickness.

The series *Thurberianae* consists of eight species, all natives of the Southwest desert of the United States with one exception—that from Lower California.

The ultimate joints of all the plants in the series are tuberculate.

The first species of this series is *O. vivipara* Rose, from near Tucson, Arizona, where it becomes almost a tree, from 12 to 14 feet in height. It usually has several strong branches from the base. Much, but loosely branched, the joints are easily detached. The young areoles have a dense cushion of yellow wool, with few or no glochids, and bear 1 to 4 spines about  $\frac{3}{4}$  inch long, porrect (sticking out), or ascending, with paper sheaths of yellow color. The leaves are very small, pointed and terete (without angles), purplish in color. The ovary is strongly tuberculate (raised spots) and having white bristles which are caducous (they fall off). The oblong fruit up to 2 inches long, is smooth, with a depressed umbilicus (navel) at the top and of a yellowish green color. The fruit is without spines and has very thick seeds.

*O. vivipara* is another problem for our cytolo-

gists and geneticists. Doctors Britton and Rose themselves raised the question as to whether the plant is only a hybrid or not, chiefly because it was found in a very limited habitat between *O. spinosior* and *O. versicolor*. From my own guess after seeing the species in the wild, and growing in my collection with the other species mentioned, I am inclined to the belief that it is a good species. (Professors Babcock, Goodspeed and Johansen take notice.) The tubercles of *O. vivipara*, which are narrowly oblong, one-third of an inch long or more, place it in a group with *O. tetracantha*, *O. recondita*, and *O. thurberi*. It being separated from this group by having easily detached joints—while the joints of *O. tetracantha*, *O. recondita* and *O. thurberi* are not readily detached. *O. tetracantha* and *O. recondita* have spines an inch long or longer.

*O. tetracantha* Toumey, is from the Tucson area of Arizona. It is a low bush usually not over 6 feet high; the terminal points are about one-third of an inch in diameter. The flowers are greenish-purple. The fruit is yellowish orange to scarlet, nearly smooth, sometimes bearing a few spines.

*O. recondita* Griffiths, from La Perla, Mexico, has purple flowers about an inch in diameter. It is a shrubby plant about 4 feet high. The tubercles on the stem form a ridge, high above, and gradually flattening below.



*O. thurberi* Eng., from Sonora, Mexico, has the shortest spines,  $1\frac{1}{2}$  inches, of the group, with narrow oblong tubercles. It is a bushy plant up to 12 feet high. Its tubercles are about  $1\frac{1}{2}$  inches long, flattened laterally. There are 3 to 5 spines from an areole, with brown papery sheaths. Flowers are brownish,  $1\frac{1}{2}$  inches across.

Of the group from *O. vivipara* to *O. thurberi*, all have narrow, oblong tubercles—while *O. clavellina* Eng., from Lower California, has low, oblong tubercles which are very short.

The other three species are only about two feet high. *O. davisii* Eng. and Big., from western Texas and eastern New Mexico, *O. viridiflora* B. & R., from Santa Fe, New Mexico, have yellow or brown spines and yellow flowers.

*O. whipplei* Eng. & Big., Tuni, New Mexico, has white spines and yellow flowers.

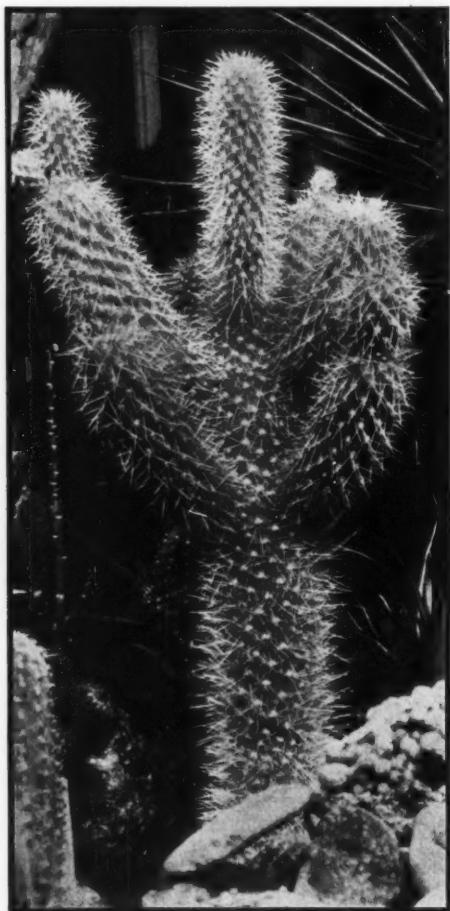


Photo by Otto Roller, New Milford, N. J.  
*Opuntia bigelovii* Eng.

*O. viridiflora* is found associated with *O. imbricata* (Haworth) De Candolle, which belongs to the series Imbricatae. It may easily be distinguished from *O. imbricata* by its much lower stature, more bush habit, smaller, different colored flowers, greenish-red and smaller seeds.

EDITOR'S NOTE: Will some of our readers send in photographs to illustrate the above plants? Proper credit will be given. Any material on Opuntias will help the writer and should be mailed to 14714 Chatsworth Dr., San Fernando, California.

### THE CENTURY PLANT (Agave)

#### *Viaticum*

Sing, ye striplings, of your shadows,  
Mirroring brook, and mossy stone,  
Weakling winds that sigh soft drivel;  
But I sing of winds that burn.  
Winds that side with sand and sunshine,  
Stealing from the very spring  
Every vestige of its moisture,  
Leaving oft a salty sting.  
I pay homage to a warrior;  
I salute a worthy One:  
Sun may sear and scorch and shrivel,  
Yet you battle bravely on.  
Still you garner from mysterious  
Somewhere, an allure that lasts  
Till your span of life is ended,  
(Forty years, few more, at best)  
Then your spike-enfashioned fingers  
Make a glorious beau geste.

What a triumph is your farewell!—  
Self-built, monumental shaft,  
Crowned with fragrant flower clusters—  
Masterpiece of Nature's craft!  
Some now look on thee in sadness;  
"Dead, the century plant so fair."  
But not I, I see your victory,  
Giving birth to beauty rare.  
One who once has viewed your battle,  
Once has shared your victory,  
Holds a memory of fragile  
Beauty for eternity.  
Knows that, tho Life sears and tortures,  
Threatens with consuming blast,  
Knows that still some dream of beauty  
Can sustain him to the last,  
And in Hope's late, full fruition,  
Compensate for all the past.

IRENCE COLE MAC ARTHUR.

Mr. Weinberg of 121 N. Gates St., Los Angeles, has been commissioned by Stanford University, San Diego Zoo, Botanical Gardens of Munich, Botanical Garden and Museum of Berlin, and the Huntington Botanic Garden to conduct an expedition to Lower California, Mexico. The purpose of the trip is collecting rare cacti, reptiles and for scientific research. The party expects to cover about 4200 miles with a fleet of trucks and will probably be gone three or four months.

## CRESTS

(discussion opened in Vol. I, No. 7, p. 130, by E. O. Orpet, Santa Barbara)

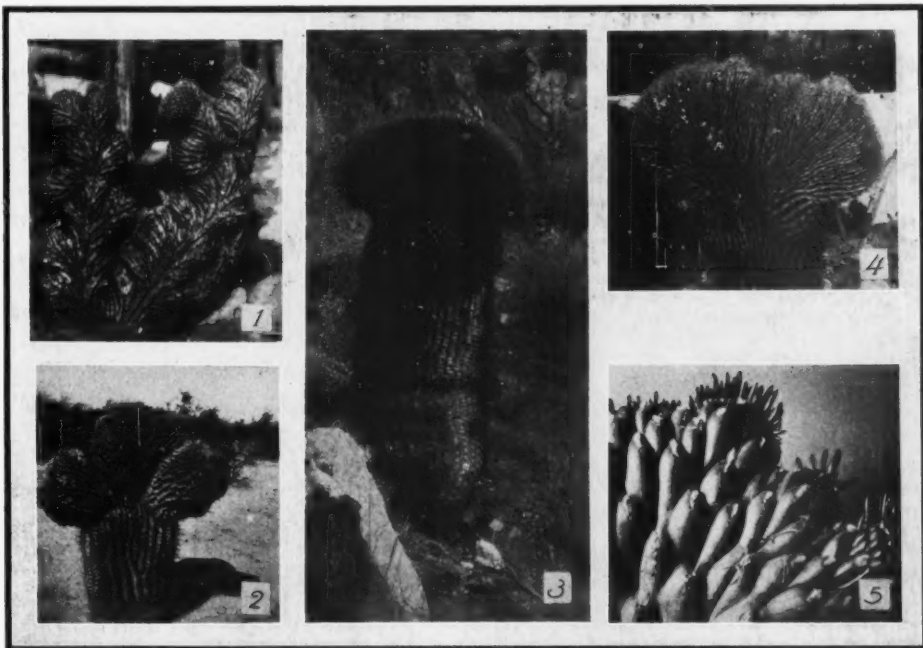
To the Editor

Noting your appeal for material on crests in the January issue, I am sending you some photographs. As to expressing an opinion on the cause of this phenomenon, I do not feel qualified to do so, never having experimented with or investigated the matter. If I throw out a suggestion or two, it will be understood to be pure speculation, and as such worthless unless proven; but it may serve as an incentive to discussion.

All growth in organisms is nothing but a multiplication of cells by division. Cell-growth would therefore seem to be a logical point of departure for an investigation. Such an abnormal growth as a crest must have its origin ultimately in some modification from the normal

in intensity and/or direction of that process. A matter for the cytologist.

There must be a stimulation of some kind present to account for this. We could think of the stimulating factors as simply being a more or less sudden excess of nourishment (Mr. Hert-rich's theory as mentioned in Mr. Orpet's letter), or else on the other hand the presence of something unfavorable; a danger against which the plant is calling up its reserves in the shape of new tissue to some threatened point. If the growing point was put out of action by mechanical injury, parasitic organisms, lack of oxygen, etc, one might imagine new cells crowding around this point and spreading out on each side to shape the typical fan-formation of a



1. *Lemaireocereus thurberi* cristata  
Edward Mendel Collection, Photo by West

2. *Ferocactus wislizeni* cristata  
Photo by Helen McCabe, San Diego

3. *Ferocactus wislizeni* cristata

4. *Ferocactus wislizeni* cristata  
Edward Mendel Collection, Photo by West

5. *Opuntia cylindrica* cristata, Photo by West.

crest (but then, why could not simply the usual callus-tissue be formed over the injury, and growth proceed normally from an adventitious bud?). The fact that the plant keeps up the abnormal type of growth long after, presumably, the original cause is no longer active, might be due to some influence spreading from one cell to another in the manner of an infection. It seems to be proven that a cell in the state of mitosis (division) emanates a radiation capable of stimulating other cells to divide likewise.

Instead of thinking of the process as induced by some stimulating factor, one might assume it to be rather caused by the removal of some inhibiting factor, like a steam-engine running wild without a governor. This would imply that a plant was fundamentally constituted so

as to proliferate indefinitely, and was only kept to orderly growth by the presence of some limiting factor. Whether this is true, I am not biologist enough to know. In this connection it is natural enough to think of the function of ductless glands in animals; but it may be quite incorrect to apply such an analogy to vegetable organisms. A like doubt applies to the tempting parallel with cancerous tissue.

Let some one better qualified than this writer take the field in the next issue.

JAMES WEST.

Editor:

Referring to your request for photographs of crests, following Mr. Orpet's article in the January "Cactus Journal," I am enclosing a photograph of a *Bisnaga cristata* which I encountered a number of years ago in the Carrizo Gorge near Jacumba, San Diego County, of this State. It seemed to be of the species common in the desert near there, which I was brought up to call *Echinocactus cylindraceus*. You will know the Britton & Rose equivalent. This specimen was developing apparently (on the left side) one of those "small globose branches" referred to in the description of this species, as given in Dr. Jepson's manual of California Plants.

C. F. SANDERS, Pasadena.

Editor:

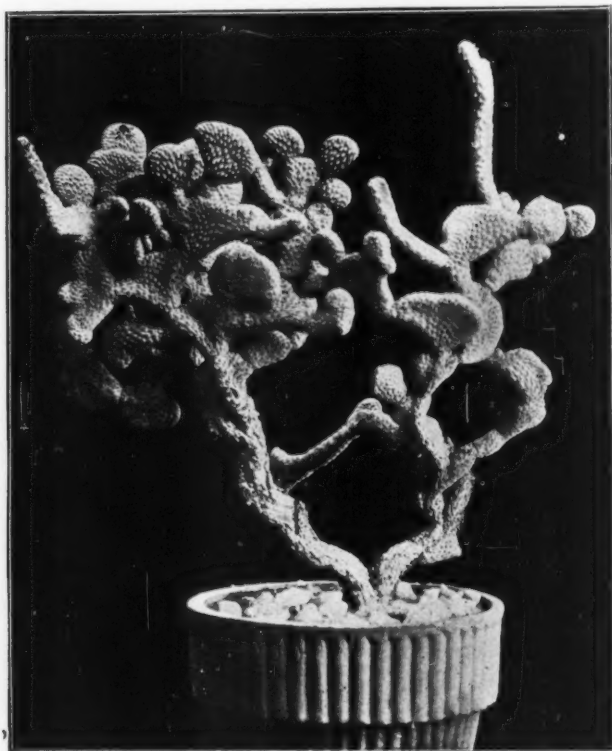
In our travels while collecting cactus in the Galurio Mountains, 50 miles south of Stafford, Arizona, we ran across one of the largest *Ferocactus wislizeni* cristates that we ever saw.

It was standing all by itself on a mesa, and was crowned with three perfect crests, and covered with a mass of red flowers.

It measured four and a half feet in height, and very near four feet in width in the widest place.

There were many other similar cristates in the same vicinity of the same type. We also found several *Opuntia alcabes* cristates there.

HELEN MCCABE.



*Opuntia ramosissima cristata*. Mr. Frick believes that the cresting of this plant is caused by a borer within the stem.

## CRESTS

By DONALD A. JOHANSEN

In the January issue, Mr. Orpet speculates on the cause of that type of fasciations known as crests. That is a subject upon which I have done considerable work and have just sent to press a detailed report of studies on the origin of fasciations, supernumerary cotyledons, etc., in *Clarkia elegans*, which belongs to the Evening Primrose family. I do not know just how far my conclusions are applicable to fasciations in *The Cactaceae*, but will nevertheless venture a few remarks.

Plant physiologists generally avoid the issue with the somewhat moth-eaten statement that fasciations are caused by excessive nourishment, or by abnormal environmental stimuli such as heavy rains accompanied by warm weather during the growing season. Geneticists, however, have come to know that many types of fasciations are heritable; that is to say, they are perpetuated from one generation to the next, but fasciations produced artificially, as by hail or by insect injuries, are not inherited.

In *Clarkia elegans*, which has been under critical observation by one of my colleagues over a period of many years, we found that certain pedigrees regularly produced fasciated plants and other abnormalities. We also found that we could tell very shortly after the seeds germinated whether or not abnormalities were to be expected. This gave me the idea of searching for the genesis of fasciations during the early developmental stages in the embryo.

In the very young embryo there are organized certain groups of cells, each group at this time consisting of but a few cells none of which is readily distinguishable from the others save by relative position in the embryo. From each of these groups arises a definite embryonal organ—the cotyledons, the root and root cap, the plumule (first leaves), etc. I found that in certain of these groups of cells there occurred, at this precocious developmental stage, an excessive number of cell divisions which permanently disarranged the normal and orderly growth of the young plantlet. Between the two cotyledons, for example, the apical meristematic tissues, where the future growth of the plant occurs, may become fan-like and produce the type of fasciation as seen in the Cockscomb and in cristate cacti. The cause of the abnormal number of cell divisions is obscure; recently certain Dutch plant physiologists have postulated the existence of substances which regulate the growth of the various parts of the plant, hence

we might venture the guess that those parts of the young plantlet which become fasciated were provided with an overabundance of the particular substance that governs their growth and development.

I made the interesting observation, which ran contrary to the accepted notion of things, that some of the cytoplasm from the pollen tube was carried into the egg cell and there became commingled with the cytoplasm of the egg cell. (The male nucleus which enters the egg cell from the pollen tube is supposed to be entirely free from foreign plasma.) This foreign plasma may possibly have something to do with the stimulation of the embryonic cells into the production of an excessive number of cells (this being the morphological explanation of fasciation), but this point cannot be proved because of technical difficulties.

The problem of the origin of fasciations in the Cactaceae is doubtless capable of solution, provided one has the proper material with which to work. As to whether cristates can be produced (if this is what Mr. Orpet means in his concluding paragraph): therein lies a fertile and decidedly intriguing field for experimentation by anyone with the requisite technical background. To judge from the fact that embryos have been artificially produced in other plants (but I should say that there is no record of such embryos having been brought to full growth), I see no reason why they cannot be produced in, say, *Opuntia*. To my way of looking at the problem, it would perhaps be more productive of results to start, not with young plants, but with the egg cells in the ovules, just before fertilization would normally occur.

### Myths and Legends of the Cactus

The Arms of Mexico is an eagle with a serpent in its beak, resting on a cactus. When the Aztecs set off on their pilgrimage, seeking the land of plenty and security, their wise men told them to build where they should find an eagle, a snake and a cactus. Reaching what is called by the people of the present City of Mexico, the plaza of Santo Domingo, in 1312, they beheld that for which they were seeking and there they rested, and built, laying the foundation for a finer and greater city than they had dreamed.

Among some of the Indian tribes of the Southwest it was believed that if a horse rubs against a cactus plant, and is pricked by the spines, his white spots will be poisoned, whereas if he has no white spots he will not suffer from the contact.

Sorcerers in Peru are said to use the thorns of the cactus, to accomplish the death or injury of people at a distance, after the manner known to Voodooists. An image of the person to be afflicted is made of clay, and this the Peruvian wonder worker jabs full of cactus thorns muttering spells the while he does so.

## JOURNAL OF THE CACTUS AND SUCCULENT SOCIETY OF AMERICA

*A monthly magazine devoted exclusively to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. "The Cactaceae," by N. L. Britton and J. N. Rose, has been adopted by this Journal for purposes of identification.*

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### PRESIDENT'S COLUMN

I have been asked many times if the Cactus and Succulent Society of America stands for and approves of the laws that govern the conservation of cactus and succulents. When I have answered "Yes," I have on several occasions been asked why it is that our members nearly all have collections, some part of which have been taken by themselves or others from our local deserts.

The existing state and county laws do not gain the object they were created for, perhaps it would be the best for conservation if we all had more of our local desert plants in our gardens to preserve them and not let them pass out of existence as they surely will in time if some way is not found to curb the ruthless collectors for eastern and foreign markets and the local collectors who gather plants and sell many of them to people who do not know how to care for them, or to those who if they did know, would not take the trouble.

When these laws were created, the makers, without a doubt, conscientiously tried to make laws that would conserve and save our desert plants in their native places but the laws as they are, seem to have an opposite effect. Like the Eighteenth Amendment, when a law is made and attention drawn to a certain restriction, many people try to find a way to break it. Since these laws went into effect a great many people have dug up cactus plants and then lost their nerve and thrown them away along the roads, or seeing a better one discarded the first. There are hundreds of once fine large cactus plants on our deserts or along the highways or byways uprooted and dead or dying. Others have brought them to their gardens and not having the proper knowledge of the care of cactus have let them die.

But the real menace to cacti in its natural state under the present laws is the dealer who has obtained a permit to gather cactus from a person who owns a few acres or who has taken out a claim on a little piece of land that has perhaps a few cactus growing on it, and using this permit in protection against the law, bootlegs immense quantities from the devil's garden or from other public lands and ships them east or sells them in quantities.

There are no guards in or around the locations where cacti grow so the collectors have ample opportunity to take the plants where they find them and if later questioned, produce their permit from some owner of a quarter section in some tract or other that no officer could possibly know the location of without a trip to the county seat and even then would not be able to locate it on the ground and if he did locate it could not prove that the plants in question did not come from there. I have seen certain species in these collector's possession that I knew did not grow within 30

miles of the tract that he had a permit for.

These laws have taken from the small garden owner the pleasure of collecting his few plants and given a few individuals the opportunity to make money selling the product of the government lands by bootlegging cacti.

If it were lawful for individuals to gather a few plants for their private gardens the cactus bootleggers that supply the local trade would not have such a lucrative business and the demand would not be as great as it is now.

The same methods as above described are perhaps used by the people who supply the cactus candy manufacturers. These manufacturers should be put out of business. They destroy in a day plants that have been growing for many years and it is surely an unnecessary waste because cactus candy is a confection that at best is but a poor excuse and is rather unpalatable. The sugar and flavoring put into cactus candy would be better without the cactus pulp that is used as a vehicle to carry the other ingredients.

I believe that the conservation laws should be so made that it would not be too difficult for individuals to gather plants for their own use. The quantity should be limited, of course, but not necessarily one or two to the person.

If Mr. A. wishes to create rather a large cactus garden on a rather large plot of ground he should be allowed to have an assortment of sizes and kinds sufficient to make a showing and should be given a permit only upon satisfactory proof that he has the space and the proper soil and most of all a knowledge of how to care for his plants.

In writing this I have had in mind principally the cylindrical or globular type of plants that grow in our local deserts and not the flat jointed varieties that will stand more abuse than most other kinds and are not as popular.

Our most attractive local cactus is the most difficult plant commonly seen in cactus collections, to make grow and remain happy when brought into the city. Therefore many replacements are necessary.

In a future article I will take up in detail how to treat our local desert plants after we have purchased them from our favorite bootlegger.

Mail subscriptions to Boyd L. Sloane, 1421 Dominion Ave., Pasadena, Calif. Subscription price \$3 per year with or without membership; foreign \$3.50.

I enclose herewith \$\_\_\_\_\_ for one year's dues in the Society and one year's subscription to the *Journal of the Cactus and Succulent Society of America*.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_



## THE NEXT MEETING WILL BE MARCH 22

(See Secretary's Notes)

## The Secretary's Notes

The January meeting of the Society was held in the Arroyo Seco Branch of the Los Angeles Public Library on the 31st of the month. Due to illness, Dr. Arthur Houghton was unable to be present and the installation of officers was dispensed with.

Our new President, Mr. R. E. Willis, presided and the meeting proved to be one of the most enjoyable and instructive of any yet held. Mr. E. O. Orpet of Santa Barbara, Second Vice-President, in his genial way gave an informal talk on the raising of cacti from seed. One hint which he gave was new to many of us. That is, in transplanting, to place the baby plant near the edge of the pot rather than in the center as is the usual practice, in order to secure a more rapid growth due to increased air and water drainage.

Following Mr. Orpet's talk, an informal discussion followed. This permitted some of us who had been saving our questions to have them answered by an expert. The succulent field is Mr. Orpet's choice.

The feature of the evening was an illustrated address by Mr. Wright Pierce of Claremont. Mr. Pierce showed many lantern slides of views taken on a trip to Arizona by himself and several other members of the Society.

That Mr. Pierce is a real naturalist as well as a cacti lover was shown in the course of his talk. One view showed a giant cactus in which five species of birds were making their homes. On this trip Mr. Pierce became interested in discovering why there were so few baby cacti and where to find those that did survive. He discovered that down among the thorns which the older cacti had dropped, one could find the baby plants growing. Those enemies of the baby plants and seeds are the quail, chipmunk, jack rabbit and gopher. Some views showing the destruction of cactus areas were shown to remind us of the extreme care needed in caring for camp fires.

In appreciation of the work which Dr. Houghton has done in contributing to the organization of the Society and carrying it successfully to its first birthday as its President, it was unanimously voted to make Dr. Houghton President Emeritus of the Cactus and Succulent Society of America. We extend congratulations to Dr. Houghton and trust that he will continue to give us of his valuable counsel.

The plants for the drawing were presented by Mr. Frick. The winners were as follows: 1st prize, Mrs. C. H. Loose; 2nd, Boyd L. Sloane; 3rd, Mr. A. Evison. The prize for the out-of-town member was won by Mr. Curtis Wright of Calistoga, California.

The world-known Mission Playhouse of San Gabriel, which is about to give its 3000th performance of the Mission Play, is constructing a garden adjacent to the theatre and asks contributions of cacti or succulents from the members to place in the garden. Those wishing to contribute plants may phone Mr. Harry C. James, GARfield 6268, or write to the secretary, who will arrange to have them sent to the Playhouse. Any variety will be acceptable.

Upon the adoption of the new By-Laws, provision was made for Associate Members. An Associate Member is a member in a family where there is already an Active Member of the Society. This applies, of course, to members living at the same address. The annual dues for an Active Member are three dollars. This includes the subscription to the Journal. The dues for Associate Members are one dollar and do not include the Journal subscription. In all other respects the Associate Members enjoy the same rights and privileges as the Active Members.

We are growing toward that thousand members! Since the first of the year memberships have been coming in at the rate of one per day.

Some of our out-of-town members who cannot be in the active work show their interest in the purposes of the Society by making substantial financial contributions. May we express to those who contributed this month our hearty appreciation of their interest.

Notice has been received of the meeting of an International Horticultural Conference and a Botanical Congress to be held in August of this year at London and Cambridge, England.

The Second Annual Show of the Cactus and Succulent Society of America is planned for the latter part of May. An active show committee, of which Mr. J. A. Ekdom, of Pasadena, is chairman, is busily at work perfecting the details of the show.

Otto H. Roller, of Union City, New Jersey, is the first person to offer a prize. He offers a substantial prize in cash for the best *Opuntia crestate* shown.

The plants to be presented at the March meeting of the Society are from the El Mirador Ranch, El Mirador Dr., Pasadena. This Ranch has purchased the collection of Rare Plant Martin. These plants are now for sale after having been put in first-class condition.

To the out-of-town member is to be sent a *Gasteria verrucosa*; 1st prize, 1 *Echeveria rosea grande*; 2nd, 1 *Scyphophyllum*; 3rd, 1 *Echeveria Hoveyana*.

Please note that this will be the only notice of the March meeting. That meeting will be held at the Pasadena Library, corner of Walnut Street and Garfield Avenue, Pasadena, on Saturday evening March 22, at 8 o'clock. This meeting will take the form of a round-table discussion. Experts will be present to answer your questions pertaining to cacti and succulents. Are you interested in glasshouse culture? Do you know how to raise cacti without irrigation? Have you had difficulty in transplanting? What euphorbias can be raised from seed? Can all euphorbias be raised from cuttings? These and other questions of similar nature will be answered.

Have you a little membership card "in your home?" Fifty cents will renew your membership to the end of June when many of the subscriptions expire. Or if you choose, three dollars and fifty cents will pay both subscription and membership to June 30, 1931.

We appreciate the prompt reply of the many members to the notice of the adjustment of dues to make the membership year and the subscription year coincide.

We also wish to thank you for your suggestions as to what type of meeting you desire and for the many words of praise for the Journal.

BOYD L. SLOANE, Secretary.

Dear Editor:

The first few numbers of the Cactus and Succulent Journal of America are very much enjoyed. They are what might be termed "Humdingers."

Talk about writing a manual on cactus and succulents! What is the Journal but that desired manual. To me it looks mighty good, and instructive. Every collector and subscriber will want to preserve each valuable number, and at the end of the twelve numbers, an index should be published to which one can refer. The twelve numbers can then be bound and marked Volume Number "One," and will be a thoroughly practical guide to the culture of Cactus and Succulents. George K. Spangler, Chicago, Ill.

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